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ST. ONGE STEWARD JOHNSTON & REENS, LLC			SUNG, CHRISTINE	
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			2878	

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/942,131

**Applicant(s)**

HOULT ET AL.

**Examiner**

Christine Sung

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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***Response to Amendment***

1. The amendment filed on 5/28/2004 has been entered.

***Claim Objections***

2. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-7 and 25-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dukor (US Patent 6,274,871) in view of Iddan (US Patent 5,512,749).

Regarding claims 1 and 25, Dukor discloses an IR microscope (See Figure 3) comprising a sample stage (element 90), optical components (elements 72, 70, beamsplitter in box 52, etc.) for guiding analyzing radiation (element 54) so that it is incident on a sample (element 10) to be analyzed which is carried on said stage (see figure 3), and optical components (elements 74, 76, 78), for guiding radiation from the sample to a detector (element 62)

Wherein the detector (element 62) comprises a small array of individual detector elements (element 92). Dukor does not specify that the outputs of the detector elements are fed in parallel to a processing means. However, Iddan et al. discloses an array of individual detector

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elements (Figure 2, elements 48), the outputs of the detector elements (see figure 4) being fed in parallel (see figure 4, elements 106, 107, 108) to processing means (107 or 108) for processing the detector element outputs. Parallel processing of detector elements of an FPA is well known in the art and is demonstrated by Iddan. Further, it is inherent that if a CCD is used, each detector element has its own detector circuitry (See Column 2, lines 46-49). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the parallel processor as disclosed by Iddan with the invention disclosed by Dukor as parallel processing would increase the speed at which the data is processed.

Regarding claims 3, 4, 5 Iddan discloses that the detector elements are arranged linearly, spaced apart, and in a plurality of rows (see Figures 2 and 4).

Regarding claim 6, Iddan discloses that the detector elements are spaced apart in each row and each row is space apart (see figures 2 and 4, and column 4 lines 60-66).

Regarding claim 7, Iddan discloses that the detector elements are staggered apart relative to those in an adjacent row (see figure 4 and column 4, lines 60-66).

Regarding claim 26, Iddan further discloses that the detector elements can be located in a Dewar type vessel (column 2, lines 35-40).

Regarding claim 27 Iddan discloses each detector element corresponds to a pixel and thus is in a 1:1 relationship, meaning that the center to center spacing of adjacent detector elements is equal to the pixel pitch (see figure 2).

Regarding claim 28, Iddan discloses an assembly (Figure 1, element 18) that can be moved into or out of the beam of radiation in order to change the magnification provided by the optical elements of the microscope (Column 3, lines 44-55).

Regarding claim 29, Iddan further discloses that the magnification assembly is located between the objective mirror (Figure 1, element 44) and its intermediate focus (element 28).

Regarding claim 30, Iddan further discloses that the magnification assembly includes a reflecting element (Figure 1, element 44) that reflects the beam of radiation away from its normal direction and a component that receives the reflected radiation (element 26).

Regarding claim 31, Iddan discloses the claimed invention except for a second magnifying component. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have included a second magnifying component, since it has been held that mere duplication of the essential working parts of device involves only routine skill in the art. *St Regis Paper Co. v. Bemis Co.*, 549 F2d 833, 193 USPQ 8(CA 71977).

Regarding claims 32-33, Iddan does not specify the use of spherical or plane mirrors, however it is well known in the optical art to use these types of mirrors for directing and magnifying radiation.

Regarding claim 34, the magnifying assembly (element 18) is moveable by the rotation about an axis. However, Iddan does not disclose the use of the operative or inoperative state. Although he does not specify that the magnifying assembly has 2 states, an operative and inoperative state, it would have been obvious to one having ordinary skill in the art at the time the invention was made to define an in use state and a nonuse state, as it is only a matter of convention.

Regarding claims 35-36, Iddan discloses a mirror (element 44) that has two operative positions, one that allows the CCD camera to detect an image, and another that allows for magnification and detection of IR radiation. Iddan does not specify that the magnification

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assembly is the element that causes a position in which the radiation can propagate to the detector without magnification. However, since the operative positions of the mirror function similarly as the claimed magnification element, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the mirror element that rotates about 45 degrees about an axis.

Regarding claims 37 and 38, Iddan discloses a cold shield (element 36) that is responsible for reducing spurious IR radiation impinging on the detector (see column 3, lines 63-67).

Although he does not specify that the shield has 2 states, an operative an inoperative state, it would have been obvious to one having ordinary skill in the art at the time the invention was made to define an in use state and a nonuse state, as it is only a matter of convention.

Regarding claim 39, Iddan further discloses optical elements (element 26) where a beam of rays to be detected passes and the desired radiation is focused onto the detector. Although Iddan does not specify the use of a plane mirror, it is well known in the art to use various types of mirrors and lenses to direct and focus desired radiation onto a detector.

Regarding claim 40, Dukor discloses an IR microscope (See Figure 3) comprising a sample stage (element 90), optical components (elements 72, 70, beamsplitter in box 52, etc.) for guiding analyzing radiation (element 54) so that it is incident on a sample (element 10) to be analyzed which is carried on said stage (see figure 3), and optical components (elements 74, 76, 78), for guiding radiation from the sample to a detector (element 62),

Wherein the detector (element 62) comprises an array of individual detector elements (element 92). Further Dukor discloses the use of a CCD (column 2 lines 46-49) that inherently has a plurality of individual detector elements or pixels that are disposed in a spaced relationship.

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Further, it is inherent that if a CCD is used, each detector element has its own detector circuitry (See Column 2, lines 46-49). Dukor does not specify that the center to center spacing is equal to or a multiple of the pixel pitch and further does not disclose that the outputs of the detector elements are fed in parallel to a processing means. However, Iddan et al. discloses each detector element corresponds to a pixel and thus is in a 1:1 relationship, meaning that the center to center spacing of adjacent detector elements is equal to the pixel pitch (see figure 2). Further, Iddan discloses an array of individual detector elements (Figure 2, elements 48), the outputs of the detector elements (see figure 4) being fed in parallel (see figure 4, elements 106, 107, 108) to processing means (107 or 108) for processing the detector element outputs. Parallel processing of detector elements of an FPA is well known in the art and is demonstrated by Iddan. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the parallel processor as disclosed by Iddan with the invention disclosed by Dukor as parallel processing would increase the speed at which the data is processed.

Regarding claim 41, Dukor discloses that the use of a CCD (column 2, lines 46-49) which inherently is made of a photoconductive element.

Regarding claim 42, Iddan discloses a shield (column 2, lines 40-45), for shielding at least one of the detector elements from unwanted radiation (column 2, lines 40-45). Although it does not explicitly state that the shield is in an operative or inoperative state, the shield is like a shutter and has the ability to change in size and therefore can open to an optimum operative state.

Regarding claim 43, Iddan discloses that the shield is located internal to the Dewar vessel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have placed the shield external to the Dewar vessel, since it has been held

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that rearranging parts of an invention only involves routine skill in the art. *In re Japikse*, 181 F2d 1019, 86 USPQ 70 (CCPA 1950).

5. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dukor (US Patent 6,274,871) in view of Iddan (US Patent 5,512,749) further in view of Dumas (US Patent 5,712,685).

The limitations set forth in the corresponding independent claims have been described in the abovementioned paragraphs.

Regarding claims 8-12 Dukor in view of Iddan does not specifically disclose that the detector elements are located at a position corresponding to a point on a grid. However, Dumas discloses a device to enhance detector resolution, including the use of a grid wherein detector elements are positioned corresponding to points on the grid (figure 3, Column 6, lines 5-19) and can be fashioned in various of grid/detector element configurations. Further Dumas discloses that the grid pattern is rectangular (figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the specific detector device as disclose by Dumas with the invention disclosed by Dukor in view of Iddan, in order to enhance image resolution.

Regarding claim 13, Iddan discloses a processor (element 50) that processes output signals received from the detector array.

6. Claims 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iddan (US Patent 5,512,749).

Regarding claims 14, Iddan discloses a detector array (Figure 2) for use in an IR microscope, said detector array comprising a plurality of individual detector elements (element

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48) each corresponding to a pixel. Further, each detector elements corresponds to a pixel and thus is in a 1:1 relationship, meaning that the center to center spacing of adjacent detector elements is equal to the pixel pitch (see figure 2).

Regarding claim 15, Iddan discloses that the detector elements are arranged in a linear array (Figure 2 and 4).

Regarding claims 16, 17, 18 Iddan discloses that the detector elements are arranged linearly, spaced apart, and in a plurality of rows (see Figures 2 and 4).

Regarding claim 19, Iddan discloses that the detector elements are staggered apart relative to those in an adjacent row (see figure 4 and column 4, lines 60-66).

7. Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iddan (US Patent 5,512,749) in view of Dumas (US Patent 5,712,685).

The limitations set forth in the corresponding independent claims have been described in the abovementioned paragraphs.

Regarding claims 20-24 Iddan does not specifically disclose that the detector elements are located at a position corresponding to a point on a grid. However, Dumas discloses a device to enhance detector resolution, including the use of a grid wherein detector elements are positioned corresponding to points on the grid (figure 3, Column 6, lines 5-19) and can be fashioned in various of grid/detector element configurations. Further Dumas discloses that the grid pattern is rectangular (figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the specific detector device as disclose by Dumas with the invention disclosed by Iddan, in order to enhance image resolution.

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8. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dukor (US Patent 6,274,871) in view of Iddan (US Patent 5,512,749) further in view Harris (US Patent 5,123,953).

Regarding claim 44, Dukor discloses an IR microscope (See Figure 3) comprising a sample stage (element 90), optical components (elements 72, 70, beamsplitter in box 52, etc.) for guiding analyzing radiation (element 54) so that it is incident on a sample (element 10) to be analyzed which is carried on said stage (see figure 3), and optical components (elements 74, 76, 78), for guiding radiation from the sample to a detector (element 62)

Wherein the detector (element 62) comprises a small array of individual detector elements (element 92). Dukor does not specify that the outputs of the detector elements are fed in parallel to a processing means and further does not disclose an assembly moveable between an operative and inoperative position by rotation about an axis in order to change the magnification provided by the optical elements of the microscope. However, Iddan et al. discloses an array of individual detector elements (Figure 2, elements 48), the outputs of the detector elements (see figure 4) being fed in parallel (see figure 4, elements 106, 107, 108) to processing means (107 or 108) for processing the detector element outputs. Parallel processing of detector elements of an FPA is well known in the art and is demonstrated by Iddan. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the parallel processor as disclosed by Iddan with the invention disclosed by Dukor as parallel processing would increase the speed at which the data is processed. Dukor in view of Iddan does not disclose an assembly movable between an operative an inoperative position by rotation about an axis in order to change the magnification provided by the optical elements of the microscope. Harris discloses a microscope that is moveable between an operative and inoperative position to

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change the magnification provided by the optical elements (i.e. condenser) of the microscope (claims 1 and 18). One of ordinary skill in the art would be motivated to have such an assembly so as to have an adaptable field of view.

*Response to Arguments*

9. Applicant's arguments filed 5/28/2004 have been fully considered but they are not persuasive.

10. Applicant states that the present invention employs a relatively small detector array (Pg 10, 3<sup>rd</sup> paragraph of Remarks), but has removed the term "small" from the respective claims rendering the argument that the instant application is different from the prior art because it is a small detector array, moot.

11. Further, the applicant argues that that each detector element has it own detection circuitry (page 10, paragraph 2) and asserts that this means each detector each has its own processor. However, the claims are to be interpreted as broadly as possible, and detection circuitry does not necessarily require individual processing means. Therefore, the argument that the claimed detector element must have its own processor is not persuasive.

12. Further applicant argues that the '749 patent does not teach that the detector elements are fed in parallel to the processing circuitry. However, the '749 patent does disclose that the detector elements are readout in parallel but are not processed in parallel.

13. Further applicant argues that the references do not state that the center-to-center spacing of adjacent detector elements is equal to the pixel pitch. Although Iddan does not specify that exact relationship such as relationship is a result effective variable. The ratio of center-to-center spacing between the adjacent detector elements and the pixel pitch affect the resolution of the

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detected radiation. Therefore dependent upon the desired resolution of the image, such a ratio can easily be determined or tailored for a given application. Further one of ordinary skill in the art would be motivated to use the claimed ratio in order to have a finer resolution of the image.

### *Conclusion*

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Thursday 7-5 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christine Sung  
Examiner  
Art Unit 2878

CS



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